

**IN THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-21. (Canceled)

22. (Currently Amended) A semiconductor device comprising:

a substrate;

a light shielding conductive layer formed over said substrate, said light shielding conductive layer being electrically connected to a fixed potential;

at least one pixel electrode formed over said substrate;

at least one thin film transistor formed over said substrate for switching said pixel electrode, said thin film transistor comprising:

a semiconductor layer having at least source, drain and channel regions and a capacitor forming portion, wherein ~~at least said channel region is overlapped with said light shielding conductive layer~~ said light shielding film is located below said semiconductor layer;

a first insulating film formed on said channel region; and

a gate electrode formed over said channel region with said first insulating film interposed therebetween,

a storage capacitor electrically connected to said thin film transistor, said storage capacitor comprising:

said capacitor forming portion of the semiconductor layer;

a capacitor forming electrode formed over said capacitor forming portion; and

a second insulating film interposed between said capacitor forming portion and said capacitor forming electrode,

a driver circuit including a shift register circuit comprising at least one second thin film transistor, said second thin film transistor comprising:

a second semiconductor layer having at least source, drain and channel regions;

a third insulating film formed on the channel region of the second semiconductor layer; and

a gate electrode formed over the channel region with the third insulating film interposed therebetween,

wherein said ~~second~~ first insulating film is thicker than said second and third insulating film.

23-34. (Canceled)

35. (Previously presented) The semiconductor device according to Claim 23, wherein a film thickness of said second insulating film is between 50 to 200 nm and a film thickness of said third insulating film is between 5 to 50 nm.

36-42. (Canceled)

43. (Currently Amended) The semiconductor device according to Claim 23, wherein said light shielding conductive layer comprises a material selected from the group consisting of phosphorous doped silicon, boron doped silicon, tungsten, tantalum, molybdenum, titanium, metal silicide and metal ~~nitrate~~ nitride.

44-58. (Canceled)

59. (Currently Amended) An electronic device having the semiconductor device of claim 23, wherein said electronic device is selected from the group consisting of a portable telephone, a video camera, a mobile computer, a goggle type display, a personal computer, an electronic game equipment, an image reproduction device, and a digital camera.

60 (New). A semiconductor device comprising:

a substrate;

a first thin film transistor formed over the substrate and electrically connected to a pixel electrode; and

a driver circuit for driving said first thin film transistor, said driver circuit including at least a shift register circuit and a level shifter circuit wherein said shift register circuit comprises a second thin film transistor and said level shifter circuit comprises a third thin film transistor,

each of said first, second and third thin film transistors comprising:

a semiconductor layer comprising crystalline silicon formed on an insulating surface, said semiconductor layer including at least a source region, a drain region and a channel region between the source and drain regions;

a gate insulator formed on the channel region; and

a gate electrode formed over the channel region with the gate insulator therebetween,

wherein the gate insulator of the first thin film transistor is thicker than the gate insulator of the second thin film transistor, and the gate insulator of the third thin film transistor

is thicker than the gate insulator of the second thin film transistor.

61. (New) The semiconductor device according to Claim 60 wherein a thickness of the gate insulator of the first thin film transistor is between 50 to 200 nm and a thickness of the gate insulator of the third thin film transistor is between 50 to 200 nm.

62. (New) The semiconductor device according to Claim 60 wherein a thickness of the gate insulator of the second thin film transistor is between 5 to 50 nm.

63. (New) A projector having a display device comprising:

a substrate;

a first thin film transistor formed over the substrate and electrically connected to a pixel electrode; and

a driver circuit for driving said first thin film transistor, said driver circuit including at least a shift register circuit and a level shifter circuit wherein said shift register circuit comprises a second thin film transistor and said level shifter circuit comprises a third thin film transistor,

each of said first, second and third thin film transistors comprising:

a semiconductor layer comprising crystalline silicon formed on an insulating surface, said semiconductor layer including at least a source region, a drain region and a channel region between the source and drain regions;

a gate insulator formed on the channel region; and

a gate electrode formed over the channel region with the gate insulator therebetween,

wherein the gate insulator of the first thin film transistor is thicker than the gate

insulator of the second thin film transistor, and the gate insulator of the third thin film transistor is thicker than the gate insulator of the second thin film transistor.

64. (New) The projector according to Claim 63 wherein a thickness of the gate insulator of the first thin film transistor is between 50 to 200 nm and a thickness of the gate insulator of the third thin film transistor is between 50 to 200 nm.

65. (New) The projector according to Claim 63 wherein a thickness of the gate insulator of the second thin film transistor is between 5 to 50 nm.

66. (New) A semiconductor device comprising:

a substrate;

a first thin film transistor formed over the substrate and electrically connected to a pixel electrode; and

a driver circuit for driving said first thin film transistor, said driver circuit including at least a shift register circuit and a sampling circuit wherein said shift register circuit comprises a second thin film transistor and said sampling circuit comprises a third thin film transistor,

each of said first, second and third thin film transistors comprising:

a semiconductor layer comprising crystalline silicon formed on an insulating surface, said semiconductor layer including at least a source region, a drain region and a channel region between the source and drain regions;

a gate insulator formed on the channel region; and

a gate electrode formed over the channel region with the gate insulator therebetween,

wherein the gate insulator of the first thin film transistor is thicker than the gate insulator of the second thin film transistor, and the gate insulator of the third thin film transistor is thicker than the gate insulator of the second thin film transistor.

67. (New) The semiconductor device according to Claim 66 wherein a thickness of the gate insulator of the first thin film transistor is between 50 to 200 nm and a thickness of the gate insulator of the third thin film transistor is between 50 to 200 nm.

68. (New) The semiconductor device according to Claim 66 wherein a thickness of the gate insulator of the second thin film transistor is between 5 to 50 nm.

69. (New) A projector having a display device comprising:

- a substrate;
- a first thin film transistor formed over the substrate and electrically connected to a pixel electrode; and
- a driver circuit for driving said first thin film transistor, said driver circuit including at least a shift register circuit and a sampling circuit wherein said shift register circuit comprises a second thin film transistor and said sampling circuit comprises a third thin film transistor, each of said first, second and third thin film transistors comprising:
  - a semiconductor layer comprising crystalline silicon formed on an insulating surface, said semiconductor layer including at least a source region, a drain region and a channel region between the source and drain regions;
  - a gate insulator formed on the channel region; and
  - a gate electrode formed over the channel region with the gate insulator

therebetween,

wherein the gate insulator of the first thin film transistor is thicker than the gate insulator of the second thin film transistor, and the gate insulator of the third thin film transistor is thicker than the gate insulator of the second thin film transistor.

70. (New) The projector according to Claim 69 wherein a thickness of the gate insulator of the first thin film transistor is between 50 to 200 nm and a thickness of the gate insulator of the third thin film transistor is between 50 to 200 nm.

71. (New) The projector according to Claim 69 wherein a thickness of the gate insulator of the second thin film transistor is between 5 to 50 nm.

72. (New) A portable information terminal having a display device comprising:

a substrate;

a first thin film transistor formed over the substrate and electrically connected to a pixel electrode; and

a driver circuit for driving said first thin film transistor, said driver circuit including at least a shift register circuit and a level shifter circuit wherein said shift register circuit comprises a second thin film transistor and said level shifter circuit comprises a third thin film transistor,

each of said first, second and third thin film transistors comprising:

a semiconductor layer comprising crystalline silicon formed on an insulating surface, said semiconductor layer including at least a source region, a drain region and a channel region between the source and drain regions;

a gate insulator formed on the channel region; and

a gate electrode formed over the channel region with the gate insulator therebetween,

wherein the gate insulator of the first thin film transistor is thicker than the gate insulator of the second thin film transistor, and the gate insulator of the third thin film transistor is thicker than the gate insulator of the second thin film transistor.

73. (New) The portable information terminal according to Claim 72 wherein a thickness of the gate insulator of the first thin film transistor is between 50 to 200 nm and a thickness of the gate insulator of the third thin film transistor is between 50 to 200 nm.

74. (New) The portable information terminal according to Claim 72 wherein a thickness of the gate insulator of the second thin film transistor is between 5 to 50 nm.

75. (New) A portable information terminal having a display device comprising:

a substrate;

a first thin film transistor formed over the substrate and electrically connected to a pixel electrode; and

a driver circuit for driving said first thin film transistor, said driver circuit including at least a shift register circuit and a sampling circuit wherein said shift register circuit comprises a second thin film transistor and said sampling circuit comprises a third thin film transistor,

each of said first, second and third thin film transistors comprising:

a semiconductor layer comprising crystalline silicon formed on an insulating surface, said semiconductor layer including at least a source region, a drain region and a channel region between the source and drain regions;



a gate insulator formed on the channel region; and

a gate electrode formed over the channel region with the gate insulator therebetween,

wherein the gate insulator of the first thin film transistor is thicker than the gate insulator of the second thin film transistor, and the gate insulator of the third thin film transistor is thicker than the gate insulator of the second thin film transistor.

76. (New) The portable information terminal according to Claim 75 wherein a thickness of the gate insulator of the first thin film transistor is between 50 to 200 nm and a thickness of the gate insulator of the third thin film transistor is between 50 to 200 nm.

77. (New) The portable information terminal according to Claim 75 wherein a thickness of the gate insulator of the second thin film transistor is between 5 to 50 nm.

78. (New) The portable information terminal according to Claim 72 wherein said portable information terminal is a mobile computer.

79. (New) The portable information terminal according to Claim 75 wherein said portable information terminal is a mobile computer.

80. (New) The portable information terminal according to Claim 72 wherein said portable information terminal is a portable telephone.

81. (New) The portable information terminal according to Claim 75 wherein said

portable information terminal is a portable telephone.

82. (New) The portable information terminal according to Claim 72 wherein said portable information terminal is a portable-type game equipment.

83. (New) The portable information terminal according to Claim 75 wherein said portable information terminal is a portable-type game equipment.

84. (New) The portable information terminal according to Claim 72 wherein said portable information terminal is an electronic book.

85. (New) The portable information terminal according to Claim 75 wherein said portable information terminal is an electronic book.

86. (New) A semiconductor device comprising:  
a substrate;  
a first thin film transistor formed over the substrate and electrically connected to a pixel electrode; and  
a driver circuit for driving said first thin film transistor, said driver circuit including at least a shift register circuit comprising a second thin film transistor; and  
a precharge circuit formed over the substrate and comprising a third thin film transistor,  
each of said first, second and third thin film transistors comprising:  
a semiconductor layer comprising crystalline silicon formed on an insulating surface, said semiconductor layer including at least a source region, a drain region and a

channel region between the source and drain regions;

a gate insulator formed on the channel region; and

a gate electrode formed over the channel region with the gate insulator therebetween,

wherein the gate insulator of the first thin film transistor is thicker than the gate insulator of the second thin film transistor, and the gate insulator of the third thin film transistor is thicker than the gate insulator of the second thin film transistor.

87. (New) The semiconductor device according to Claim 86 wherein a thickness of the gate insulator of the first thin film transistor is between 50 to 200 nm and a thickness of the gate insulator of the third thin film transistor is between 50 to 200 nm.

88. (New) The semiconductor device according to Claim 86 wherein a thickness of the gate insulator of the second thin film transistor is between 5 to 50 nm.

89. (New) A projector having a display device comprising:

a substrate;

a first thin film transistor formed over the substrate and electrically connected to a pixel electrode; and

a driver circuit for driving said first thin film transistor, said driver circuit including at least a shift register circuit comprising a second thin film transistor; and

a precharge circuit formed over the substrate and comprising a third thin film transistor, each of said first, second and third thin film transistors comprising:

a semiconductor layer comprising crystalline silicon formed on an insulating

surface, said semiconductor layer including at least a source region, a drain region and a channel region between the source and drain regions;

a gate insulator formed on the channel region; and

a gate electrode formed over the channel region with the gate insulator therebetween,

wherein the gate insulator of the first thin film transistor is thicker than the gate insulator of the second thin film transistor, and the gate insulator of the third thin film transistor is thicker than the gate insulator of the second thin film transistor.

90. (New) The projector according to Claim 89 wherein a thickness of the gate insulator of the first thin film transistor is between 50 to 200 nm and a thickness of the gate insulator of the third thin film transistor is between 50 to 200 nm.

91. (New) The projector according to Claim 89 wherein a thickness of the gate insulator of the second thin film transistor is between 5 to 50 nm.

92. (New) A portable information terminal having a display device comprising:

a substrate;

a first thin film transistor formed over the substrate and electrically connected to a pixel electrode;

a driver circuit for driving said first thin film transistor, said driver circuit including at least a shift register circuit comprising a second thin film transistor; and

a precharge circuit formed over the substrate and comprising a third thin film transistor, each of said first, second and third thin film transistors comprising:

a semiconductor layer comprising crystalline silicon formed on an insulating surface, said semiconductor layer including at least a source region, a drain region and a channel region between the source and drain regions;

a gate insulator formed on the channel region; and

a gate electrode formed over the channel region with the gate insulator therebetween,

wherein the gate insulator of the first thin film transistor is thicker than the gate insulator of the second thin film transistor, and the gate insulator of the third thin film transistor is thicker than the gate insulator of the second thin film transistor.

93. (New) The portable information terminal according to Claim 92 wherein a thickness of the gate insulator of the first thin film transistor is between 50 to 200 nm and a thickness of the gate insulator of the third thin film transistor is between 50 to 200 nm.

94. (New) The portable information terminal according to Claim 92 wherein a thickness of the gate insulator of the second thin film transistor is between 5 to 50 nm.

95. (New) The portable information terminal according to Claim 92 wherein said portable information terminal is a mobile computer.

96. (New) The portable information terminal according to Claim 92 wherein said portable information terminal is a portable telephone.

97. (New) The portable information terminal according to Claim 92 wherein said

portable information terminal is a portable-type game equipment.

98. (New) The portable information terminal according to Claim 92 wherein said portable information terminal is an electronic book.